

Price Cap Regulation

Feasibility in the Indian power sector

CRISIL Infrastructure Advisory believes that the country's power sector should progress towards price cap regulation in the long term in order to improve the distribution companies' efficiency and commercial orientation. While several issues need to be resolved before this regulation can be implemented, some medium-term steps can be initiated.

Historically, the various state governments have determined electricity tariffs in India. Consequently, the tariff-setting process has suffered from significant political interference. In order to minimise this, various states have established state electricity regulatory commissions (SERCs) to regulate their respective power sectors, including tariffs.

The SERCs have adopted a "cost-plus regulation" whereby tariffs are set so as to enable the utilities to recover their entire costs and make a regulated predetermined return. Although most SERCs follow this regulation by examining a utility's various overheads, not all expenses get approved. The SERCs exercise discretion on the appropriate cost levels with the objective of improving a utility's efficiency. This introduces an element of "performance-based" regulation.

NEED FOR PRICE CAP REGULATION

The commonly followed present method of regulation requires the SERCs to review tariffs annually. This engenders a high degree of regulatory uncertainty for the utilities. In light of the planned privatisation of state-owned distribution companies (discoms), however, it is becoming increasingly important to mitigate this uncertainty.

The discoms need to attract huge capital to expand and revamp their networks. Their ability to do so could, however, be adversely affected if there is any regulatory uncertainty that has a bearing on their future income. Thus, some income predictability needs to be provided over a certain time-frame (three to five years) for a discom to plan effectively. CRISIL Infrastructure Advisory believes a long-term regulatory framework could pro-

vide the required predictability.

While the country has no precedent of a comprehensive long-term regulation for retail tariffs, some attempts have been made to partially introduce such regulation. For instance, in its Tariff Order 2001-02 for the Uttar Pradesh Power Corporation and Kanpur Electricity Supply Company, the Uttar Pradesh Electricity Regulatory Commission (UPERC) laid out a five-year trajectory for their effective loss (T&D and collection losses). It had proposed to use this trajectory to compute tariffs in subsequent years. Also, the recent privatisation of discoms in Delhi was preceded by policy directives from the state government. One of these required the determination of a loss-reduction trajectory over a five-year period, at the bidding stage itself. The Andhra Pradesh Electricity Regulatory Commission (APEREC) too has published a consultative paper on long-term tariff principles. While the paper does not seek to prescribe the tariff trajectory, it intends to lay down the principles for determining a utility's "aggregate revenue requirement" (ARR) over a finite "control period".

All these attempts, in fact, focus on the ARR. None of them seeks to specify a retail tariff trajectory (weighted average or consumer-category-wise) even though such a methodology may be more sophisticated (though riskier) and could enhance the discoms' efficiencies. Price cap regulation (PCR), one of the most common forms of performance-based regulation, lays down such a tariff trajectory. Based on CRISIL's study on the feasibility of implementing PCR in some states, CRISIL Infrastructure Advisory believes that power regulation should progress towards such a regime in the long term.

Under PCR, the controllable component of the regulated tariff is adjusted each year according to predetermined indices. The utility too is required to achieve certain benchmarks such as customer service levels and supply standards. Moreover, PCR provides compensation for any changes in the uncontrollable costs. The method of adjusting tariffs, the definition of uncontrollable costs and the trajectory of efficiency improvements are all decided at the beginning of a finite three-to-five-year control period, after which all such parameters may be reset.

Because of this predetermined method of setting tariffs, PCR mitigates the risk of regulatory uncertainty. Thus, any utility governed by PCR could plan its investments, manpower needs, financing costs, etc. more effectively. A well-designed PCR also induces the utility to optimise costs while meeting the customer service and other quality standards. PCR not only highlights the efficiency improvement to consumers but also provides certainty (especially to industrial consumers) on the retail tariff's trajectory. This helps the utility to win over or "buy-in" consumers to the reform process.

KEY ISSUES TO BE RESOLVED

Certain key issues would, however, have to be resolved before PCR can be implemented. Some of them are generic in nature while others arise due to the electricity sector's present status and practices. These are:

Business plan-related issues

The basis of any price cap is a comprehensive and credible business plan covering the control period. Drawn up by the utility and approved by the regulator, the plan should describe in detail the

utility's envisaged investments, its efficiency improvement measures, power purchase plan and projections on various cost drivers. Some of the often inter-related critical issues that affect the business plan's development are:

Accuracy of demand estimates: The PCR's success would depend on the accuracy of the demand estimates underlying the utility's business plan. This may prove to be a key impediment to implementing PCR in India given that a large proportion of the consumption by subsidised categories (mainly agricultural and "lifeline" domestic consumers) is unmetered. Consequently, the base level of demand cannot be accurately estimated (and hence accurately projected). Also, a PCR regime that necessarily requires a discom to bill on the basis of actual consumption cannot be implemented.

Current and future system loss levels: Another key factor underlying the business plan (and closely related to demand estimation) is the determination of the opening level of system losses and the projection of an "acceptable" loss-reduction curve. While the former is constrained by inadequate data (on consumption, technical and commercial losses), the latter is more complicated as it requires the regulator to strike a balance between the consumers' need to benefit from efficiency improvement targets and the discom's need for an achievable target. Thus, enhanced metering is required to gather precise data on consumption and hence, losses.

Investment requirements: The utility's investment requirement is related to its technical loss-reduction targets and demand growth estimates. Inadequate information on a discom's existing network quality coupled with the problems in estimating demand makes it increasingly difficult to project a discom's investment requirements.

Customer service standards: An-

other issue closely related to investment requirement projections is setting customer service and other quality standards. Again, it is difficult to set these standards because of inadequate information on existing customer service. PCR also entails rewarding discoms for cutting costs. But in many cases, compromising on service quality is an easy way of cutting costs. Thus, a regulator would have to ensure that the utility achieves appropriate service levels.

Base-level expenses: The information available on most state-owned discoms' base-level expenses is woefully inadequate. Many of them have no audited accounts. Yet, while projecting controllable costs, a regulator would need to set an achievable target that takes account of the utility's present expense levels.

Thus, it is important for the electricity sector to work towards providing baseline data, ranging from loss levels and base year operating expenses to the network's existing state. Moreover, this information must be verifiable. For this, the utility's latest audited accounts must be made available. Besides, the use of a credible auditor would help boost investor confidence in the figures. It is also necessary for the utility to develop and debate with the regulator on its detailed investment and load growth plans, taking into account the specified consumer service standards.

Design-related issues

The regulator also needs to address certain factors that impact the price cap's design. These include:

Duration of control period: A single price cap formula is applicable for a finite control period. This control period would be determined by the short- and long-term trade-offs made by the utility. If the price control lasts for long, a utility would have strong incentives to reduce costs since it would reap benefits for several years. The utility's sustainability could, however, be endangered if the price control is too demanding and spread over a long control period.

Regulators in the UK have generally chosen a four-to-five-year control period, which strikes a balance between the incentives and the risk that prices may get out of line with costs. In Argentina, the first price control period was fixed at 10 years. That is because the discoms were expected to make losses in the first five years of the concession period, which could be recouped in the second half.

Defining controllable and uncontrollable costs: A regulated company may incur significant costs that are both uncertain and outside its control, such as fuel expenses, power purchase costs and taxes. If the discoms' retail tariffs were indexed only to a general price index, it would be exposed to significant risks.

Thus, a PCR scheme needs to define both controllable and uncontrollable costs. Further, it must specify the exact nature of and principles for passing through uncontrollable costs. The UK and Argentinian distribution utilities have incorporated such pass-through. All controllable costs are typically linked to an index or a set of indices. In the UK, the standard retail price index has always been used. In Argentina, the producer price index for the US is used (and translated into the

PCR: A mathematical representation

The widely accepted definition of "price cap" may be expressed as:

$$P_{tmax} = P_{t-1} \left(1 + \frac{RPI_t - X}{100} \right) + Z, \text{ where,}$$

P_{tmax} = Cap of price for t^{th} year;

P_{t-1} = Average price for $(t-1)^{\text{th}}$ year;

RPI_t is the percentage increase in the retail price index in t^{th} year;

X represents the measure of desired productivity increase of the utility in percentage terms; and

Z captures external changes unrelated to inflation or the utility's productivity and represents any incremental costs that are pass-through such as fuel expenses, power procurement costs, taxes. While allowing a utility to pass-through uncontrollable costs, this definition limits the increase in retail tariffs through a long-term formula, thus incentivising the utility to optimise its controllable costs.

national currency) to reassure foreign investors. Thus, the regulator would have to assess the likely trend of the company's expenses vis-à-vis various indices before selecting an index. A customised index may also be devised, which may mirror the company's cost structure more accurately.

Although PCR is meant to allow discoms to retain their profits, in practice, a regulator would be under tremendous pressure if the utilities earned super-normal profits. Such profits may be the result of using relatively liberal starting points for determining losses, expenses and the like or due to liberal compensation for losses and investments.

To "clawback" such profits, the opening tariffs for the subsequent control period could be significantly lowered (compared to tariffs in the last year of the preceding control period). Such a one-time revision was done in the UK. Another possible "clawback" method could be sharing such profits through a predetermined formula. But such profit-sharing leads to intrusive regulation and hence, to perceptions of an unstable regulatory regime. Further, setting a threshold (beyond which profits need to be shared) could lead to gaming by discoms.

Socio-political issues

PCR requires that retail tariffs, either average or consumer-category-wise, are specified at the beginning of the control period. But this is a politically sensitive issue, especially in the context of agricultural and domestic consumers. Moreover, public hearings of utilities requesting long-term regulation principles have revealed that consumers typically associate such long-term regulation with large tariff increases. This problem could be even more acute under PCR, which requires the regulator to spell out the retail tariffs applicable during the control period.

Thus, both the utilities and the government need to dispel such doubts through comprehensive communication, which presents the long-term advantages of

PCR to consumers and conveys the additional risks (as compared to annual regulation) borne by the utilities.

Ownership-related issues

Yet another issue is whether PCR can be implemented for state-owned discoms or should it necessarily be implemented only after they have been privatised. While PCR is meant to provide regulatory certainty and provide incentives for efficiency improvements – issues that should be addressed regardless of ownership – it is widely believed that the private sector has a stronger motivation to respond to the incentives offered under PCR.

There is also a possibility that publicly owned discoms may fail to respond to PCR, in which case the regulator would have to revise targets at a later stage, thereby undermining regulatory credibility. For instance, the Kanpur Electricity Supply Company's long-term reduction targets (as set under UPERC's tariff order for 2000-01) were revised under UPERC's tariff order for 2001-02.

Thus, it is necessary that PCR be launched as close as possible to the process of privatisation. This assumes that all the other prerequisites for launching PCR, such as 100 per cent metering, have already been met.

Legal issues

Some legal issues also need to be addressed. The most important one is that the existing electricity reform acts need to be amended to unambiguously provide for "multi-year tariff regulation" as one of the guiding principles of setting tariffs (the Electricity Bill, 2001 has an enabling provision for introducing multi-year tariffs). Any ambiguity on this count could expose the utility to legal risks later. Following the Reform Act's amendment, the SERCs may also need to amend their conduct of business regulations.

Conclusion

Thus, a lot needs to be accomplished before a credible PCR can be implemented in India. And even if all the required conditions are satisfactorily

met, a considerable amount of time and debate would be required to actually design and implement PCR.

Based on the experience of other developing economies, the regulatory process for setting multi-year tariffs should commence at least two years before the price cap is scheduled to come into effect. A lot of data would have to be collected, verified and processed before the regulator can propose the price cap.

Would long-term regulation in India, then, have to necessarily await the resolution of these issues? While CRISIL Infrastructure Advisory appreciates the need to resolve these issues, it would recommend that the regulators look at other solutions that can be implemented within a three-year time-frame. APERC's consultative paper on long-term tariff principles may be a pointer here since it seeks to provide certainty to the utilities on the principles for determining the ARR over a finite control period.

In the medium term, low metering levels could be a serious impediment to the introduction of any long-term regulation. Such low metering levels imply that the loss reduction trajectory, which influences the power purchase cost – the largest cost component for discoms – cannot be credibly established. To get around this problem, it is recommended that the trajectory be discovered through the bidding process during privatisation. Moreover, the regulatory framework should also provide for a revision of the parameters (such as opening loss levels) if it is established later that such levels were inaccurately estimated.

A PCR regime can be catalysed if regulatory actions today move in a direction so as to ultimately bring in price caps. CRISIL Infrastructure Advisory believes that in the long run, a PCR regime is most conducive for inducing efficiency improvements and commercially orienting discoms.

Mangesh Kelkar, Head, Reforms and Regulations, and Khawar Iqbal, Associate, CRISIL Infrastructure Advisory